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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,349	01/27/2004	Erik C. Metz	D2724	1071

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EXAMINER	
CHIN, RICKY	

ART UNIT	PAPER NUMBER
4157	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/765,349	METZ ET AL.	
	Examiner	Art Unit	
	RICKY CHIN	4157	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *1-27-04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *1-27-04* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1-27-04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims (1-16) are rejected under 35 U.S.C. 103(a) as being unpatentable over Farhan et al., US 6,449,071 in view of Well-known Prior art.

Regarding claim 1, Farhan discloses a method for multi-port aggregation in a digital return path CATV system, the method comprising the steps of: digitizing each of a plurality of return path signals (See col. 2, lines 8-17, which discloses that reverse signals from many subscribers are summed and converted to digital format); splitting each of the plurality of return path signals into a low band and an upper band (See col. 4. lines 37-50 which discloses a dividing the reverse spectrum possessing a low information content channel and a high information content channel); combining each of the plurality of low band signals to form a combined low band signal (See col. 5 lines 1-10 which disclose that the reverse signals are summed by respective summing amplifiers); downconverting each of the plurality of upper band signals from an original frequency range into a new downconverted frequency range (See col. 5 lines 11-20 and

col. 6 lines 17-22 ,which discloses compressing the input data and performing complex-down conversion);

Farhan does not explicitly teach of time division multiplexing the plurality of downconverted upper band signals with the combined low band signal to form an aggregate data stream. Official Notice is taken on the notoriously well-known time division multiplexing. Therefore, it would have been obvious of one of ordinary skill in the art at the time of the invention to have modified the teachings of Farhan to have included time division multiplexing of the upper band signals with the low band signals for the mere benefit of being able to better accommodate a variety of users.

Regarding claim 2, Farhan teaches all the claim limitations of the method of claim 1, further he teaches of comprising the step of serializing the aggregate data stream(See col. 5 lines 35-40 which discloses a serializing an framing unit).

Regarding claim 3, Farhan teaches all the claim limitations of the method of claim 2, further he teaches of comprising the step of transmitting the serialized aggregate data stream to a receiver (See col.5 lines 35-40 which discloses transmission over an optical communication channel to the head end).

Regarding claim 4, Farhan teaches all the claim limitations of the method of claim 3, further he teaches of comprising the step of receiving the low band signals at a digital to analog converter and outputting a single RF return stream low band signal

(See col.7 lines 1-15 which discloses a D/A converter for conversion back to an analog signal).

Regarding claim 5, Farhan teaches all the claim limitations of the method of claim 3, further he teaches of comprising the step of upconverting each of the plurality of upper band signals to the original frequency range of the upper band signals (See col. 6, lines 59-67, which discloses that the received signal on each channel is translated to the appropriate center frequency)

Regarding claim 6, Farhan teaches all the claim limitations of the method of claim 5, further he teaches of comprising the step of receiving each of the plurality upper band signals at a digital to analog converter and outputting an RF return stream signal for each of the plurality of signals (See col.7 lines 1-15 which discloses a D/A converter for conversion back to an analog signal).

Regarding claim 7, Farhan teaches all of the claim limitations of the method of claim 6, further he teaches of comprising the step of combining the single RF return stream low band signal with each of the plurality of RF return stream signals for each of the plurality of upper band signals to form a full return band signal for each of the upper band outputs. (See Fig.7, components 712 -716 which discloses a low band signal BPF which is then summed up in 716 with a plurality of upper band outputs from the remaining upper band BPF's. Furthermore, summing signals to combine low band and

high band signals is well-known in the art. Therefore it would have been obvious of one of ordinary skill in the art to have modified the teachings of Farhan to include the summing of low band with each of the upper band signals to form a full return band signal for each of the upper band outputs for the mere benefit of being able to accommodate various data applications and/or for the expected result of reducing the data rate for a particular application)

Regarding claim 8, Farhan teaches all of the claim limitations of the method of claim 1, he further teaches of wherein parameters determining the split frequency for the low band and upper band, and an upper bound on the upper band, are programmable (See col.4 lines 13-37 which discloses downloading appropriate commands for programming the dsp).

Regarding claim 9, Farhan teaches all of the claim limitations of the method of claim 1, further he teaches of wherein a parameter determining sample resolution of said step of downconverting each of the plurality of upper band signals from an original frequency range into a new downconverted frequency range is programmable (See col. 4 lines 13-36, which discloses that a programming unit could be coupled to the control input of the node to download appropriate commands for programming the dsp)

Regarding claim 10, Farhan teaches of a system for transmitting multiple return path signals using lower data rate transmitters, the system comprising: a converter for

digitizing each of the multiple return path signals (See fig 4., 410 which discloses A/D converters); a processor for processing/band-splitting each of the multiple return path signals into respective low and high bands(See Fig 4., 420 which discloses the dsp which is responsible for filtering and channelization functions), and adding the low bands to form an aggregate low band signal (See Fig 4., 405 which disclose summing amplifiers); a multiplexer for time division multiplexing the aggregate low band signal with each high band signal to form a combined data stream(See Fig 4., 440 which discloses a multiplexer. Furthermore, OFFICAL NOTICE is taken by the examiner to note that time division is notoriously well-known in the art); and a transmitter for transmitting the combined data stream (See Fig 4.,460 which discloses the transmission to the output port by the laser diode 450).

Regarding claim 11, Farhan teaches all of the claim limitations of a system according to claim 10, further he teaches of wherein said processor comprises a digital processor(See Fig 4., 420, dsp)

Regarding claim 12, Farhan teaches all of the claim limitations of a system according to claim 10, further he teaches of wherein said processor comprises digital and analog components (See Fig. 4, 410, which discloses an A/D converter which would inherently imply digital and analog components).

Regarding claim 13, Farhan teaches of a system according to claim 10, further he teaches of comprising a digital to analog converter at a receiver end to receive the

low band signals and output a single RF return stream low band signal(See col.7 lines 1-15 which discloses a D/A converter for conversion back to an analog signal).

Regarding claim 14, Farhan teaches of a system according to claim 10, further he teaches of comprising a digital to analog converter at a receiver end to receive each of the plurality upper band signals and output an RF return stream signal for each of the plurality of signals (See col.7 lines 1-15 which discloses a D/A converter for conversion back to an analog signal).

Regarding claim 15, Farhan teaches of a system according to claim 10, further he teaches of wherein said processor may be programmed to determine the split frequency for the low band and upper band, and an upper bound on the upper band (See col. 4 lines 13-36 which discloses the ability to change the filter algorithm with the use of programming commands).

Regarding claim 16, Farhan teaches of a system according to claim 10, further he teaches of wherein said processor may be programmed to determine a sample resolution to downconvert each of the plurality of upper band signals from an original frequency range into a downconverted frequency range (See col. 4 lines 13-36, which discloses that a programming unit could be coupled to the control input of the node to download appropriate commands for programming the dsp)

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. US 2003/0046706 – which teaches of signal compression for fiber nodes

2. US 2003/0154494 - which teaches of bandpass component decimation and transmission of data in cable tv return paths

3. US 5,892,865 – which teaches of splitting an upstream return path stream into high and low bands.

4. US 7,231,655 – which teaches of a technique for reverse transport of data in a hybrid fiber coax cable system

5. US 6,462,851- which teaches of a method for transmitting reverse analog signals by sub-sampling the digital reverse bandwidth

Contact

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ricky Chin whose telephone number is 571-270-3753. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vu Le can be reached on 571-272-7332. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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